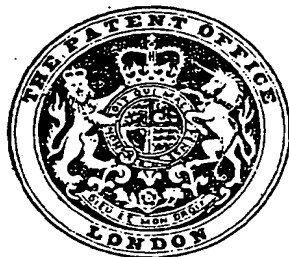


961.855



PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventors: DONALD EARL DAILEY and ANTON FREDERICK EILERS, JR.

Volume Reduced
As Contained
Continued After
Unreeling

961.855

Date of Application and filing Complete Specification April 13, 1961.

No. 13303/61.

Complete Specification Published June 24, 1964.

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Index at acceptance:—A5 X(1, 2, 4, 5C, 5D)

International Classification:—A 61 j

COMPLETE SPECIFICATION

Nursing Container

We, MEAD JOHNSON & COMPANY, a corporation organized under the laws of the State of Indiana, United States of America,

Figure 1 is a plan view of a nursing container embodying the invention;

Figure 2 is an elevation of the container 45

taken generally; on similar to removed and 50

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least limited use. disclosed and claimed herein is particularly designed to facilitate formula preparation 70 with a minimum of equipment and work, to provide improved nursing action and for construction from inexpensive components for throw-away use.

In the drawings, container 10 comprises top and bottom sections 11 and 12, both of a moldable, heat sealable plastic material, as polyethylene, joined together along a central sealed surface 13. The sealed surface 13 may be cut to an appropriate size with a hot knife, melting or "vulcanizing" the material and forming a bead 13a around the periphery of the seal. An opening 14 in top section 11 receives a nipple 15 which 80

ERRATA

SPECIFICATION No. 961,855

Page 1, Heading, for "Eilers, Jr" read "Eilers"

Page 2, line 4, for "maintains" read "maintain"

Page 2, line 60, after "along" insert "inner"

THE PATENT OFFICE
20th July 1964

- 25 top section and containing therein; and a second or bottom section of synthetic plastics material sealed to the top section and collapsible thereinto, said bottom section being more flexible than the top section and having a shape and size substantially the same as that of the top section so that in the collapsed condition it closely mates with the interior of the top section, said bottom section being radially collapsible into said top section upon withdrawal of the container contents without retarding or aiding the flow of the contents therefrom.
- 30
- 35

- 40 Further features and advantages will readily be apparent from the following specification and from the accompanying drawings, in which:

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COMPLETE SPECIFICATION

Nursing Container

We, MEAD JOHNSON & COMPANY, a corporation organized under the laws of the State of Indiana, United States of America, of Evansville, Indiana, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a nursing container and more particularly to a disposable or "throw-away" nursing container for infants.

The nursing container with which the invention is concerned is collapsible so that air is not admitted as the contents are drained. Accordingly the likelihood of the infant swallowing air during feeding, believed to be a major cause of colic, is reduced.

According to the present invention there is provided a disposable infant nursing container comprising a first or top section of synthetic plastics material having a nipple opening therein; a nipple mounted on said top section and communicating with the opening therein; and a second or bottom section of synthetic plastics material sealed to the top section and collapsible thereinto, said bottom section being more flexible than the top section and having a shape and size substantially the same as that of the top section so that in the collapsed condition it closely mates with the interior of the top section, said bottom section being radially collapsible into said top section upon withdrawal of the container contents without retarding or aiding the flow of the contents therefrom.

Further features and advantages will readily be apparent from the following specification and from the accompanying drawings, in which:

Figure 1 is a plan view of a nursing container embodying the invention;

Figure 2 is an elevation of the container with the cover removed;

Figure 3 is an enlarged section taken generally along line 3—3 of Figure 1;

Figure 4 is an enlarged section similar to Figure 3, with the nipple cover removed and the nipple extended;

Figure 5 is a fragmentary section through the nipple receiving opening in the top section of the container, without the nipple;

Figure 6 is a partial sectional view illustrating the progressive collapse of the bottom section of the container into the top; and

Figure 7 is a perspective view illustrating a preferred manner of holding the container.

Cleaning and sterilizing bottles and nipples and the preparation of milk based formulas occupy a substantial portion of the time of mothers of young infants and require considerable investment in personnel, equipment and time in the nurseries of hospitals. Disposable nursing containers have been proposed in the past and some have enjoyed at least limited use. The nursing container disclosed and claimed herein is particularly designed to facilitate formula preparation with a minimum of equipment and work, to provide improved nursing action and for construction from inexpensive components for throw-away use.

In the drawings, container 10 comprises top and bottom sections 11 and 12, both of a moldable, heat sealable plastic material, as polyethylene, joined together along a central sealed surface 13. The sealed surface 13 may be cut to an appropriate size with a hot knife, melting or "vulcanizing" the material and forming a bead 13a around the periphery of the seal. An opening 14 in top section 11 receives a nipple 15 which

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may be folded within itself during storage and shipment, as shown in Figure 3. A cover 16 is secured over nipple 15 to protect it and maintains sterility, and is provided with a tab 17 to facilitate removal.

Top and bottom sections 11 and 12 of container 10 are formed of a thin sheet of synthetic plastic material. By "plastic" any suitable flexible material is intended, including rubber. The sections may be vacuum molded, thermo formed, cast or blow molded, for example. Both sections have a generally spherical configuration and are somewhat less than hemispherical in extent. In the specific container illustrated in the drawings, the two sections are defined by a central angle of substantially 1.4 radians. This relationship provides a finished container which has a rounded configuration and is convenient to hold. Concentric ribs 11a and 12a are formed in sections 11 and 12, respectively, by the moulding operation. A flange 18 extends outwardly from cover 16 overlying and conforming with the surface of top section 11 keeping the area surrounding the nipple receiving opening 14 clean.

Referring to Figure 5, the configuration of the nipple receiving opening prior to insertion of the nipple is illustrated. An inwardly tapered neck portion 22 extends upwardly from the surface of top section 11 and is separated therefrom by an inwardly indented rib 23. A flat inwardly extending top surface 24 joins neck portion 22 with a depending re-entrant surface 25 which terminates in an inwardly extending flange 26.

Nipple 15 has a channel 28 formed therein for receiving certain of the neck surfaces of the container. The channel opens outwardly from an angular wall of the nipple and is defined by a vertical inner surface 29, generally horizontal top and bottom surfaces 30 and 31 and an angularly outwardly extending outer surface 32. Nipple 15 is inserted in the upper section 11 of the container before the two sections are sealed together, and is preferably inserted from the inside. Upon insertion of the nipple 15 the re-entrant portion of the neck of the container seats in channel 28 with the bottom of the nipple locked above rib 23, as best seen in Figures 3 and 4. The top surface 24 of the container opening is held against the upper surface 30 of channel 28 with segment 25a of re-entrant portion 25 extending angularly across the channel from the upper inner corner to the lower outer corner, while segment 25b lies along the bottom surface of the channel. Flange 26 extends upwardly along channel surface 29. The bottom surface 34 of nipple 15 lodges above inwardly indented rib 23 aiding the compression forces of the re-entrant neck structure in holding the nipple in place. An outer peripheral rim 35 of the nipple lodges between the deformed

re-entrant neck portion 25 and neck portion 22. Of course, after the two sections of the container are sealed together nipple 15 cannot be removed inwardly through the opening as it was inserted, and a substantial force is required to pull it out through opening 14. Indented rib 23 serves a dual function in receiving a complementary indented rib 36 formed at the base of cover 16, Figure 3.

For hospital use, container 10 is provided in collapsed form with the bottom section 12 inverted inside top section 11. Nipple 15 is folded within itself and cover 16 is in place. Preferably, the container is provided with a powdered formula constituent during manufacture, and the formula may be completed by the addition of sterile or distilled water. The water may be added directly from a bulk container through a gravity feed system and a manual or automatic metering device. The additive mechanism (not shown) is preferably provided with a needle or the like which is inserted through the cross-cut opening 37 in the end of the nipple 15, the flow of water into the container causing the bottom section 12 to expand to the position of Figure 2. In a hospital, for example, this procedure may be set up on a mass production basis and the entire formula requirements for each feeding prepared in a short time. After filling, the cover 16 is replaced and left over the nipple until the container is used for feeding the infant.

At the time of feeding, cover 16 is removed and nipple 15 is extended to the positions of Figures 2, 4 and 7, as by applying pressure to the wall of the container forcing the nipple out. At the same time, any air left in the container during filling is expelled through the nipple so that the infant swallows no air from the container. The nipple may also be extended by pulling it out, but this is not recommended for sanitary reasons. In nursing an infant, the container is preferably held as illustrated in Figure 7 with the second finger inserted through opening 38 in a tab 39 extending outwardly from the juncture line 13 of the container sections, and preferably formed as an integral part of the sections. The peripheral edge 40 of the two container sections is grasped by the thumb and forefinger on one side of tab 39 and by the third and little finger on the other side with the bottom of the container resting against the palm of the hand. This is an extremely stable support for container 10 which may readily be moved to accommodate changes in the position of the infant. The thin peripheral flange and light weight of the container permit the baby to hold the container and feed itself at an earlier age than with a heavy glass nursing bottle.

If the infant requires stimulation to cause it to nurse properly, a slight pressure applied

to the bottom of the container by the palm of the hand forces some of the formula out through the nipple into the infant's mouth. As the formula is withdrawn from the container the bottom section 12 collapses within the upper section 11 as indicated in Figure 6 forcing formula into the nipple keeping it filled. This collapse starts at the juncture line 13 between the container sections and progresses inwardly therefrom so that formula is not trapped between collapsed portions of the bottom section wall and the wall of the top section. It is not necessary for air to enter the container as the formula is withdrawn and the cross cut nipple acts as a check valve allowing only the outward flow of formula and restricting inward flow of air. Thus the likelihood of the infant swallowing substantial quantities of air during nursing is reduced. As the container and nipple are free of air at all times during feeding, it is not necessary that the container be elevated above the infant, but it may be in any position above or below. The ribs 12a formed in the bottom section 12 of the container facilitate and guide the collapse of the bottom section into the top section.

Several factors contribute to the progressive collapse of bottom section 12 as the contents of the container are withdrawn. The bottom section is more flexible than top section 11 so there is little or no tendency for the top to collapse. The re-entrant nipple receiving neck structure in the top contributes to the stiffness of the top, and the sections may be formed from materials having different physical characteristics or thickness with bottom sections 12 more flexible. Of particular importance is the fact that bottom section 12 is formed in its inverted or collapsed position. The tendency of the bottom is to return to this position as the container is emptied. Furthermore, the collapsed configuration of the bottom section may be controlled with accuracy so that it mates with the interior of the top section insuring complete emptying of the container.

If the baby does not take all of the formula in the container, the amount remaining may be measured by means of the ribs 11a formed in the upper section which are preferably so spaced that they indicate fluid ounces. Before measuring is effected, the bottom or lower section 12 should be expanded to its original condition so that it does not occupy any space within top section 11. A pull tab 42 formed at the center of the bottom section 12 facilitates this.

A quantity of the nursing containers 10 may be packaged in a sterile receptacle, as a sealed can, which is opened only when the containers are ready for use. As pointed out above, the containers may initially be provided with a powdered formula constituent, or they may be sold empty and the

user can add such formula as is desired in addition to the necessary liquid. The containers may also be prepared by the manufacturer with the complete formula already mixed. Although the specific container described herein is intended for use in a hospital or the like where many of them may be filled simultaneously on a mass-production basis, the container may be used at home by the mother where the formula for each feeding is prepared as it is needed. As the nursing container is designed for only one use following which it is thrown away, nipple 15 may be softer than the usual new nipple which is designed for a long period of use. This is particularly important in feeding young infants who sometimes have difficulty in manipulating stiff nipples. The throw-away container also obviates the objections of some mothers that nipples found in hospitals are often gummy or sticky as a result of frequent and extensive boiling to insure sterilization. Each nipple is new and has exactly the right consistency and characteristics for easy nursing. The over-all shape of the container conforms generally with the shape of the mother's breast adding further inducement to the baby to nurse.

For babies who have graduated from a straight liquid diet, the container may be used for semi-liquid or liquid paste compositions as of cereal or the like. The collapsible nature of the container permits the mother to assist feeding such compositions by gently squeezing to force the material into the baby's mouth.

While we have shown and described one embodiment of our invention, it is to be understood that it is capable of many modifications. Changes therefore, in the construction and arrangement may be made without departing from the scope of the invention as defined in the appended claims.

WHAT WE CLAIM IS:—

1. A disposable infant nursing container comprising a first or top section of synthetic plastics material having a nipple opening therein; a nipple mounted on said top section and communicating with the opening therein; and a second or bottom section of synthetic plastics material sealed to the top section and collapsible thereinto, said bottom section being more flexible than the top section and having a shape and size substantially the same as that of the top section so that in the collapsed condition it closely mates with the interior of the top section, said bottom section being radially collapsible into said top section upon withdrawal of the container contents without retarding or aiding the flow of the contents therefrom.

2. The nursing container according to claim 1, wherein said top section has a configuration of a portion of a sphere less than

a hemisphere, said nipple receiving opening being centrally located in said top section.

3. The nursing container according to claim 2, wherein said top and bottom section each comprises portions of a sphere of equal diameter, defined by a central angle of substantially 1.4 radians.

4. The nursing container according to claim 1, wherein said top section has a locking rib formed therein; and a removable cover adapted to extend over said nipple and having a flange which conforms with the surface of the top section, said removable cover having an indented rib formed adjacent to its flange that engages the locking rib on the top section forming a seal between the cover and the top section.

5. The nursing container according to claim 1, 2 or 3, including a pull tab centrally located on said bottom section.

6. The nursing container according to any one of the preceding claims, including a plurality of concentric ribs formed on said bottom section.

7. The nursing container according to any one of claims 1 to 5, including a plurality of concentric ribs formed on both the top and bottom sections.

8. The nursing container according to any one of claims 2 to 7, including supporting means extending outwardly from said container adjacent the seal between said top and bottom sections.

9. The nursing container according to claim 1, wherein said nipple receiving opening is provided with a re-entrant neck surface, and said nipple having a channel therein in which said re-entrant neck surface is received, said neck surface being deformed in said channel locking the nipple and top section together.

10. The nursing container according to claim 9, including a locking rib on said top section in engagement with a surface of said nipple.

11. The nursing container according to

claim 9, wherein said neck is inwardly tapered and has an inwardly extending top surface, a depending re-entrant surface, an inwardly extending flange at the bottom of the depending surface, and a locking rib on the outer wall of the top section, said channel having a generally vertical inner surface, horizontal top and bottom surfaces and an outer surface extending angularly outwardly, said nipple being received in the opening in said container with the top surface of said neck engaging the top surface of said channel, the re-entrant neck surface being deformed inside said channel and extending diagonally across the channel and along the bottom surface thereof, said flange extending upwardly along the inner channel surface, and said nipple engaging the locking rib on said top section.

12. The nursing container according to any one of the preceding claims, including a cross-shaped cut in the end of said nipple.

13. The nursing container according to any one of the preceding claims, wherein said nipple has a channel opening outwardly in an angular side wall thereof and above the bottom of the nipple with a generally vertical inner surface, horizontal top and bottom surfaces and an outer surface extending angularly outwardly.

14. The nursing container according to any one of claims 1 to 10, wherein said top section has a nipple receiving opening including an inwardly tapered neck, an inwardly extending top surface, a depending re-entrant surface and an inwardly extending flange at the bottom of said re-entrant end surface.

15. The nursing container constructed as herein described with particular reference to the embodiment illustrated in the accompanying drawings.

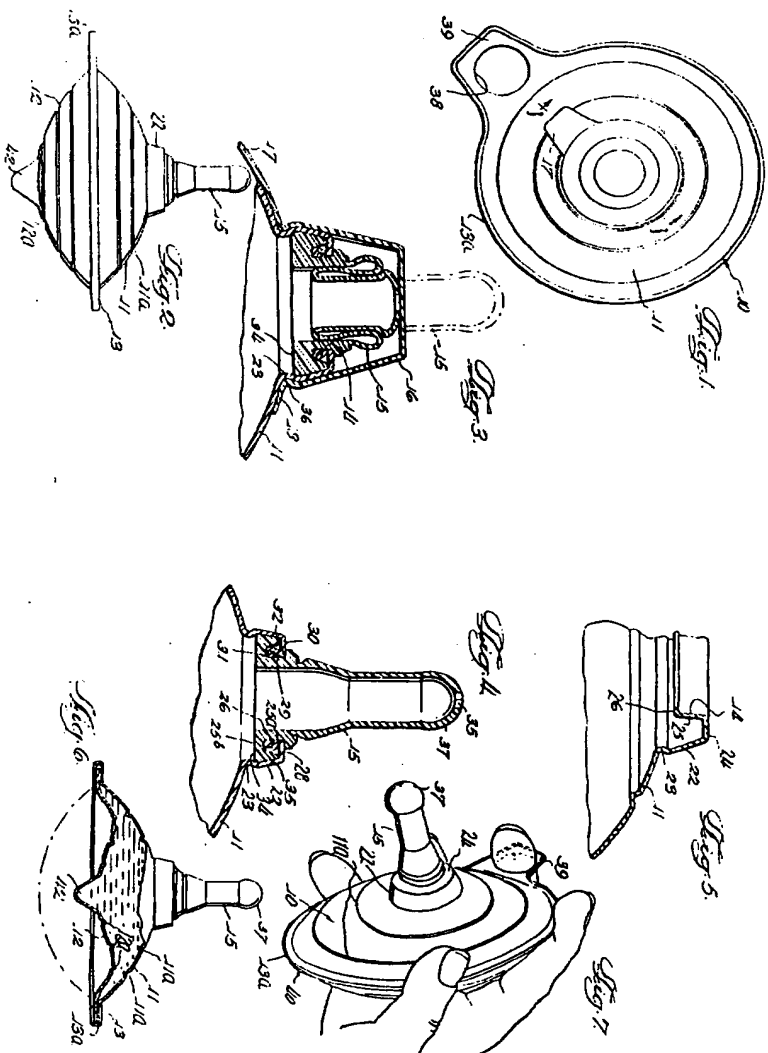
STEVENS, LANGNER, PARRY &
ROLLNSON,
Chartered Patent Agents,
Agents for the Applicants.

aid neck is inwardly tapered
radially extending top surface,
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surfaces and an outer sur-
face angulantly outwardly, said
rib being formed in the opening in said
top surface of said neck
on a surface of said channel,
said surface being deformed
inwardly and extending diagonally
inwardly and along the bottom sur-
face extending upwardly
channel surface, and said
locking rib on said top

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